



Interim Resource Operations Licence

for

Three Moon Creek Water Supply Scheme

ISSUED TO SUNWATER

JUNE 2008

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1.0 INTRODUCTION

1.1. Title

This licence (“the Licence”) may be cited as the Interim Resources Operations Licence for the Three Moon Creek Water Supply Scheme.

1.2. Licensee

The Licensee under the Licence is SunWater (“the Licensee”).

1.3. Water Managed under the Licence

The Licence authorises the diversion, storage and management of water in Three Moon Creek for the ponded area of Cania Dam and downstream to AMTD 13.2 km which includes the ponded area of Youlambie Weir, Monto Weir, Bazley Weir, Avis Weir and Mulgildie Weir; Monal Creek from AMTD 2.8 km to the junction with Three Moon Creek and the Three Moon Creek benefited underground water area.

1.4. Effect of Licence

The Licence may be subsequently amended or otherwise dealt with in accordance with the *Water Act 2000* including, but not limited to, being amended to more correctly or more comprehensively state the operating arrangements as they were at the date of commencement of the Licence.

The Licence provides no guarantee and makes no assurances with regard to the performance of water entitlements associated with the Licence.

1.5. Commencement Date and Term of the Licence

The Licence commences on the day of issue and continues until replaced by a Resource Operations Licence under the *Water Act 2000* or until it is amended, transferred, cancelled or otherwise dealt with under the *Water Act 2000*.

2.0 WATER INFRASTRUCTURE AND OPERATING ARRANGEMENTS

The water infrastructure and operating arrangements approved under the Licence are described in SCHEDULES 1 and 2. Where there is any conflict between the requirements of SCHEDULE 1 and SCHEDULE 2, then the requirements of SCHEDULE 2 shall prevail. SCHEDULE 1 sets out:

- (a) The water infrastructure to which the Licence applies including the watercourses used for water distribution and drainage.
- (b) The operating arrangements for water infrastructure including operating arrangements designed to protect natural resources that may be adversely affected by the operation of the infrastructure.

3.0 INTERIM WATER ALLOCATION, MANAGEMENT AND SHARING

Terms relating to water managed under the Licence, water sharing rules, other water supply responsibilities and the apportionment of interim water allocations in accordance with the *Water Act 2000*, are detailed in SCHEDULE 2.

Interim water allocation granted to the Licensee for water losses may not be transferred. However, interim water allocation may be the subject of seasonal water assignments in accordance with the Licence.

4.0 MONITORING AND REPORTING

The Licensee must monitor and report on activities under the Licence in accordance with SCHEDULE 3. Where SCHEDULE 1 or SCHEDULE 2 lists activities of a monitoring or reporting nature the Licensee must also undertake those activities in addition to the requirements of SCHEDULE 3.

5.0 AMENDMENT HISTORY

The original licence was issued on 10 November 2000. The amendments since that date are shown in SCHEDULE 4.

6.0 DICTIONARY

All terms referred to in the Licence have the same meaning given to them in the *Water Act 2000* unless a contrary interpretation is specified in the Licence.

Chief Executive means chief executive of the Department of Natural Resources and Water.

NRW or department means the Department of Natural Resources and Water.

Surface water means water in a watercourse, lake, spring, dam or weir managed under the Licence.

SW means surface water.

UW means underground water.

The Licence is issued on the 26th June 2008



**Graeme Milligan
General Manager
Water Accounting and Management**

SCHEDULE 1 – Water Infrastructure and Operating Arrangements

S1.1 CANIA DAM - THREE MOON CREEK - AMTD 110.1 km

ITEM	DESCRIPTION
1. Description of water infrastructure:	Earth and Rockfill Dam.
2. Storage Capacities:	
a) Total storage capacity	88,500 ML.
b) Commandable storage capacity	87,850 ML.
c) Dead Storage capacity	650 ML. [The volume below the level of the outlet works (EL 300 m AHD) is 650 ML. A volume of 650 ML was adopted in hydrologic modelling.]
3. Physical Dimensions (Main Structure):	
a) Full supply level	EL 331.0m AHD.
4. Outlet Works/Spillway Arrangement/Diversion Works:	
a) Description of works	<p><u>Outlet Works:</u> The outlet works consist of a 2159mm diameter pipe. On the downstream end of the outlet pipe is a bifurcate and 2 short lengths of 900mm diameter pipe to which are fitted 2 x 900mm butterfly guard valves and 2 x 750mm hollow jet control valves discharging into a short concrete outlet structure.</p> <p><u>Spillway:</u> An unlined spillway through the ridge about 1km to the west of the dam. The spillway consists of a 90m free overfall concrete crest discharging into a 40m wide chute down the ridge and a 60m wide discharge channel through the alluvial terrace of the creek. The spillway is some 300m long and has a maximum outflow capacity of 3,150 m³/s.</p>
b) Levels	EL 293.13m AHD invert level of the cone valve. EL 331.00 m AHD spillway overflow.
5. Inlet Works:	
a) Multi level offtakes	Single level offtake. The intake tower is a concrete structure which rises 42m above the creek bed, to 5m above the full supply level of the dam.
b) Levels	Sill level EL 300.00m AHD.
6. Pass flows:	
a) Environmental provisions	During periods of low water levels in Three Moon Creek from AMTD 110.1km to AMTD 105km, releases may be made to support a community of platypus from AMTD 110.1km to AMTD 105km taking into account advice from the Environmental Protection Agency regarding releases for this purpose.
b) Volume of first flush currently required to be passed through structure	There is currently no requirement.
c) Riparian/stock and domestic flows	Releases of water from Cania Dam will not be made solely for stock or domestic purposes.

SCHEDULE 1 (Cont)

ITEM	DESCRIPTION
d) Other compensation flows (eg. for underground water resources)	No releases made.
e) Flow variations	Releases are made depending on available storage. If storage is greater than 30% capacity, a summer release of up to approximately 7,500 ML and a winter release of up to approximately 6,000 ML are made. Alternatively, a winter release of up to approximately 13,500ML may be made, with no summer release. From recorded information, the following monthly releases have been made: Minimum monthly release 0ML. Maximum monthly release 6255ML. Average monthly release 1178ML.
f) Maximum Release Rates, actual as agreed for Resource Protection	No maximum rates are in place. Releases greater than 400ML / day, flood crossings in Three Moon Creek and so releases do not generally exceed this.
7. Operational constraints:	
a) Minimum operating level/capacity	EL 300.0m AHD. 650 ML. [Sill of inlet]
b) Operation of fabridams	Cania Dam is not equipped with a fabridam.
c) Operation of gates	Cania Dam is not equipped with gates.
d) Flood Mitigation	No provision for flood mitigation.
8. Management of storage water levels and quality:	
a) Water Quality Management, eg: Algal Management, multi-level offtakes including release strategies	Single level offtake, no provisions for changing levels for water quality. Contingency plan as outlined in the Licensee's Blue-Green Algae Monitoring Manual.
b) Minimum operating level for protection of fauna	Storage is not to be drawn down below dead storage level of EL 300 m AHD (650 ML). The volume corresponding to 2.5 metres depth of water is 10 ML. Although not agreed, this depth of water has been discussed as an absolute minimum volume for the protection of fauna.
c) Storage fringe margin management	The Licensee owns and controls the flood margin. Much of this land is leased to adjoining landholders. Leases require land owners to keep land free of noxious weeds and vermin.
9. Operation of Fish Transfer Systems:	No fish transfer systems at Cania Dam.

SCHEDULE 1 (Cont)

S1.2 YOULAMBIE WEIR (INCLUDING ANABRANCH WEIR) - THREE MOON CREEK - AMTD 70.3 km

ITEM	DESCRIPTION
1. Description of water infrastructure:	Steel Sheet piling cascade Weir and Anabranh Weir, for storage, underground water recharge and Youlambie diversion.
2. Storage Capacities:	
a) Total storage capacity	143 ML.
b) Commandable storage capacity	142ML comandable from outlet works. 143 ML for recharge purposes.
c) Dead Storage capacity	EL 231.92m AHD. 1ML. As a recharge weir the effective dead storage is zero.
3. Physical Dimensions (Main Structure):	
a) Full supply level	EL 235.58m AHD.
4. Outlet Works/Spillway Arrangement/Diversion Works:	
a) Description of works	<p><u>Outlet Works:</u> A single 600mm diameter pipe with a 300mm diameter gate valve Outlet works are silted up. Presently water goes over the top of the structure or seeps into underground water.</p> <p><u>Anabranh Outlet:</u> Concrete structure 2.13m long x 1.94m high x 1.37m wide fitted with trash racks. Water level is controlled by drop boards with a 0.46m high x 0.91m wide outlet gate for releases.</p>
b) Levels	EL 235 58m AHD crest level of Youlambie Weir. EL 231.92m AHD level of outlet works of Youlambie Weir. EL 236.65m AHD crest level of Youlambie Anabranh Weir. EL 234.970m AHD level of outlet works of Youlambie Anabranh Weir.
5. Inlet Works:	
a) Multi level offtakes	Single Level Offtake. Inlet works consist of an inlet box with provision for dropboards.
b) Levels	EL 231.77m AHD.
6. Pass flows:	
a) Environmental provisions	No releases currently made specifically for environmental purposes.
b) Volume of first flush currently required to be passed through structure	There is currently no obligation to pass flows downstream.

SCHEDULE 1 (Cont)

ITEM	DESCRIPTION
c) Riparian/stock and domestic flows	Releases of water from Youlambie Weir will not be made solely for stock or domestic purposes.
d) Other compensation flows (eg. for underground water resources)	Flows down the Youlambie Channel to recharge the area of alluvium between Three Moon and Monal Creek. Water stored in this weir is for Underground water recharge.
e) Flow variations	Flows down Youlambie diversion channel: Maximum Monthly Releases 1211ML. Minimum Monthly Releases 0ML. Average Monthly Releases 173ML.
f) Maximum Release Rates, actual as agreed for Resource Protection	No agreed maximum release rates are in place.
7. Operational constraints:	
a) Minimum operating level/capacity	Invert of outlet is EL231.92m AHD. As a recharge weir the effective dead storage is zero.
b) Operation of fabridams	Youlambie Weir is not equipped with a fabridam.
c) Operation of gates	Youlambie Weir is not equipped with gates.
d) Flood Mitigation	No provision for flood mitigation.
8. Management of storage water levels and quality:	
a) Water Quality Management, eg: Algal Management, multi-level offtakes including release strategies	Single level offtake. No provision for changing levels for water quality. Not monitored for Blue Green Algae.
b) Minimum operating level for protection of fauna	No minimum operating level is set for protection of fauna. This weir rarely dries out, as the bed level is approximately the same as underground water in this area.
c) Storage fringe margin management	The storage fringe margin is maintained by land holders adjacent to the storage.
9. Operation of Fish Transfer Systems:	No fish transfer systems at Youlambie Weir.

SCHEDULE 1 (Cont)

S1.3 MONTO WEIR - THREE MOON CREEK - AMTD 64.8 km

ITEM	DESCRIPTION
1. Description of water infrastructure:	Weir (Steel Sheet Piling) for storage and underground water recharge.
2. Storage Capacities:	
a) Total storage capacity	27 ML.
b) Commandable storage capacity	27 ML.
c) Dead Storage capacity	As a recharge weir the effective dead storage is zero.
3. Physical Dimensions (Main Structure):	
a) Full supply level	EL 226.74m AHD.
4. Outlet Works/Spillway Arrangement/Diversion Works:	There are no inlet or outlet works for Monto Weir.
a) Description of works	N/A.
b) Levels	
5. Inlet Works:	N/A.
a) Multi level offtakes	
b) Levels	
6. Pass flows:	
a) Environmental provisions	No releases possible. In the current release strategy from Cania Dam this weir is empty for the majority of the year.
b) Volume of first flush currently required to be passed through structure	No flows through this structure are possible.
c) Riparian/stock and domestic flows	No releases are possible.
d) Other compensation flows (eg. for underground water resources)	No flows through this structure are possible. Water stored in the weir is for underground water recharge.
e) Flow variations	No flows through this structure are possible.
f) Maximum Release Rates, actual as agreed for Resource Protection	No releases are possible.
7. Operational constraints:	
a) Minimum operating level/capacity	As a recharge weir the minimum operating level is bed level.
b) Operation of fabridams	Monto Weir is not equipped with a fabridam.
c) Operation of gates	Monto Weir is not equipped with gates.
d) Flood Mitigation	No flood mitigation.

SCHEDULE 1 (Cont)

ITEM	DESCRIPTION
8. Management of storage water levels and quality: a) Water Quality Management, eg: Algal Management, multi-level offtakes including release strategies b) Minimum operating level for protection of fauna c) Storage fringe margin management	No offtake structure. No control measures or evasive actions have been implemented. No minimum operating level is set for protection of fauna. With the current operating strategy of Cania Dam releases, this weir would be empty for the majority of the year. The storage fringe margin is maintained by land holders adjacent to storage.
9. Operation of Fish Transfer Systems:	No fish transfer systems at Monto Weir.

SCHEDULE 1 (Cont)

S1.4 BAZLEY WEIR - THREE MOON CREEK - AMTD 58.7 km

ITEM	DESCRIPTION
1. Description of water infrastructure:	Weir (Steel Sheet Piling Cascade) for storage and underground water recharge.
2. Storage Capacities:	
a) Total storage capacity	75 ML. FSL = EL 221.5m AHD.
b) Commandable storage capacity	56ML commandable from outlet works. As a recharge weir the effective commandable storage is 75ML.
c) Dead Storage capacity	EL 219.90m AHD invert of outlet pipe. 19 ML. As a recharge weir the effective dead storage is bed level.
3. Physical Dimensions (Main Structure):	
a) Full supply level	EL 221.50m AHD.
4. Outlet Works/Spillway Arrangement/Diversion Works:	Outlet works are silted up. Presently water goes over the top of the structure or seeps into underground water.
a) Description of works	Outlet works consist of a single 300mm diameter reinforced concrete pipe 700mm in length. Control is provided at the inlet by a single 300mm-batescrew gate.
b) Levels	EL 219.90m AHD invert level.
5. Inlet Works:	
a) Multi level offtakes	Single level offtake. Inlet works consist of a 1000mm wide x 3850mm long inlet chute fitted with a trash screen and a grating cover.
b) Levels	EL 219.80m AHD floor level.
6. Pass flows:	
a) Environmental provisions	No releases currently made specifically for environmental requirements.
b) Volume of first flush currently required to be passed through structure	There is currently no obligation to pass flows downstream.
c) Riparian/stock and domestic flows	Releases of water from Bazley Weir are not made solely for stock or domestic purposes.
d) Other compensation flows (eg. for underground water resources)	Flows downstream are for underground water recharge and surface water allocations.
e) Flow variations	Releases made from this weir are made over the spillway and records of releases from the outlet works are not recorded.
f) Maximum Release Rates, actual as agreed for Resource Protection	No agreed maximum release rates are in place.

SCHEDULE 1 (Cont)

ITEM	DESCRIPTION
<p>7. Operational constraints:</p> <p>a) Minimum operating level/capacity</p> <p>b) Operation of fabridams</p> <p>c) Operation of gates</p> <p>d) Flood Mitigation</p>	<p>EL 219.90m AHD invert of outlet pipe. 19 ML. As a recharge weir the minimum operating level is bed level.</p> <p>Bazley weir is not equipped with a fabridam.</p> <p>Bazley weir is not equipped with gates.</p> <p>No provision for flood mitigation.</p>
<p>8. Management of storage water levels and quality:</p> <p>a) Water Quality Management, eg: Algal Management, multi-level offtakes including release strategies</p> <p>b) Minimum operating level for protection of fauna</p> <p>c) Storage fringe margin management</p>	<p>Single level offtake, no provision for changing levels for water quality. No control measures or evasive actions have been implemented.</p> <p>No minimum operating level is set for protection of fauna. With the current operating strategy for Cania Dam releases, this weir would be empty for the majority of the year.</p> <p>The storage fringe margin is maintained by land holders adjacent to storage.</p>
<p>9. Operation of Fish Transfer Systems:</p>	<p>Not fish transfer systems at Bazley Weir.</p>

SCHEDULE 1 (Cont)

S1.5 AVIS WEIR - THREE MOON CREEK - AMTD 46.8 km)

ITEM	DESCRIPTION
1. Description of water infrastructure:	Weir (Steel Sheet Piling Cascade) for storage and underground water recharge.
2. Storage Capacities:	
a) Total storage capacity	250 ML. FSL = EL 210.05m AHD.
b) Commandable storage capacity	250 ML.
c) Dead Storage capacity	0 ML. Invert of outlet = EL204.75m AHD.
3. Physical Dimensions (Main Structure):	
a) Full supply level	EL 210.05m AHD.
4. Outlet Works/Spillway Arrangement/Diversion Works:	
a) Description of works	Outlet works consist of a single barrel 1085mm diameter pipe that reduces to a 300mm diameter outlet. A single 300mm gate valve contained within an outlet structure provides control.
b) Levels	EL204.75m AHD invert level.
5. Inlet Works:	
a) Multi level offtakes	Single level offtake structure 1.61m long x 1.5m wide x 4.2m high with trash racks and a 1085mm diameter outlet pipe.
b) Levels	EL204.75m AHD invert level.
6. Pass flows:	
a) Environmental provisions	No releases currently made specifically for environmental requirements.
b) Volume of first flush currently required to be passed through structure	There is currently no obligation to pass flows downstream.
c) Riparian/stock and domestic flows	Releases of water from Avis Weir are not made solely for stock or domestic purposes.
d) Other compensation flows (eg. for underground water resources)	Avis weir recharges underground water, water passed downstream to Mulgildie Weir is used for surface water allocations.
e) Flow variations	With the current release strategy to release 13500ML over a 3 month period commencing in early June, from Cania Dam, the following releases at Avis Weir are typical. Maximum 28ML/d. Normal 24ML/d. Minimum 6 ML/d.
f) Maximum Release Rates, actual as agreed for Resource Protection	No maximum release rates actual are in place.

SCHEDULE 1 (Cont)

ITEM	DESCRIPTION
<p>7. Operational constraints:</p> <p>a) Minimum operating level/capacity</p> <p>b) Operation of fabridams</p> <p>c) Operation of gates</p> <p>d) Flood Mitigation</p>	<p>0 ML. Invert of outlet = EL204.75m AHD.</p> <p>Avis weir is not equipped with a fabridam.</p> <p>Avis weir is not equipped with gates.</p> <p>No provision for flood mitigation.</p>
<p>8. Management of storage water levels and quality:</p> <p>a) Water Quality Management, eg: Algal Management, multi-level offtakes including release strategies</p> <p>b) Minimum operating level for protection of fauna</p> <p>c) Storage fringe margin management</p>	<p>Single level offtake, no provision for changing levels for water quality. No control measures or evasive actions have been implemented.</p> <p>No minimum operating level is set for protection of fauna. With the current operating strategy for Cania Dam releases, this weir could be empty for part of the year.</p> <p>The storage fringe margin is maintained by land holders adjacent to storage.</p>
<p>9. Operation of Fish Transfer Systems:</p>	<p>No fish transfer systems at Avis Weir.</p>

SCHEDULE 1 (Cont)

S1.6 MULGILDIE WEIR - THREE MOON CREEK - AMTD 35.9 km

ITEM	DESCRIPTION
1. Description of water infrastructure:	Weir (Timber Piled) for storage and underground water recharge.
2. Storage Capacities:	
a) Total storage capacity	330 ML.
b) Commandable storage capacity	230 ML.
c) Dead Storage capacity	EL 199.00m AHD. 100 ML.
3. Physical Dimensions (Main Structure):	
a) Full supply level	EL 201.75m AHD.
4. Outlet Works/Spillway Arrangement/Diversion Works:	
a) Description of works	Outlet works consist of 900mm × 750mm box culverts through the centre of the weir structure. This is controlled by a 900 x 750 slide gate before emptying into a cascade outlet structure.
b) Levels	EL 199.00m AHD.
5. Inlet Works:	Inlet works consist of a 1,200mm wide × 2,400mm reinforced concrete inlet chute provided with shut off facility provided by dropboards.
a) Multi level offtakes	Not applicable.
b) Levels	EL 199.00m AHD.
6. Pass flows:	
a) Environmental provisions	No releases currently made specifically for environmental requirements.
b) Volume of first flush currently required to be passed through structure	There is currently no obligation to pass flows downstream.
c) Riparian/stock and domestic flows	Releases of water from Mulgildie Weir are not made solely for stock or domestic purposes.
d) Other compensation flows (eg. for underground water resources)	No releases made.
e) Flow variations	Releases from Cania Dam may be passed through the outlet works. Maximum rate of 40 ML/d. Normal rate 20 ML/d. Minimum rate 0 ML/d.
f) Maximum Release Rates, actual as agreed for Resource Protection	No maximum release rates are in place.

SCHEDULE 1 (Cont)

ITEM	DESCRIPTION
<p>7. Operational constraints:</p> <ul style="list-style-type: none"> a) Minimum operating level/capacity b) Operation of fabridams c) Operation of gates d) Flood Mitigation 	<p>EL 199.00m AHD: Invert of outlet works. 100 ML.</p> <p>Mulgildie Weir is not equipped with a fabridam.</p> <p>Mulgildie Weir is not equipped with gates.</p> <p>No flood mitigation.</p>
<p>8. Management of storage water levels and quality:</p> <ul style="list-style-type: none"> a) Water Quality Management, eg: Algal Management, multi-level offtakes including release strategies b) Minimum operating level for protection of fauna c) Storage fringe margin management 	<p>Single level offtake, no provision for changing levels for water quality. No control measures or evasive actions have been implemented.</p> <p>No minimum operating level is set for protection of fauna. With the current operating strategy for Cania Dam releases, this weir would store water for the majority of the year.</p> <p>The storage fringe margin is maintained by landholders adjacent to storage.</p>
<p>9. Operation of Fish Transfer Systems:</p>	<p>No fish transfer systems at Mulgildie Weir.</p>

SCHEDULE 1 (Cont)

**S1.7 WATERCOURSES USED FOR WATER DISTRIBUTION AND DRAINAGE -
THREE MOON CREEK / MONAL CREEK**

ITEM	DESCRIPTION
1. Name of watercourse:	i. Three Moon Creek. ii. Monal Creek.
2. Location:	i. <u>Three Moon Creek.</u> The storage area of Cania Dam AMTD 110.1m to Abercorn Gauging Station AMTD 13.2 km. ii. <u>Monal Creek.</u> From the outlet of Youlambie Diversion AMTD 2.8km to its junction with Three Moon Creek AMTD 00.
3. Use of watercourse:	Water distribution.
4. Drainage Inlet Structures:	No drainage inlet structures.
a) Location	N/A.
5. Maintenance:	
a) Weed control measure	No weed control is undertaken on these regulated streams.
b) Silt removal	No silt removal is undertaken.
6. Improvements:	
a) Recharge works	Recharge works are: Cania Dam. Youlambie Weir. Youlambie Channel. Monto Weir. Bazley Weir. Avis Weir. Mulgildie Weir.
b) Other improvements	No improvements made to watercourses.
7. Watercourse Relocations:	The Licensee has not carried out any works to relocate or change the route of the original watercourses.
8. Management and use of natural waterways (including return flows) used for water distribution and drainage:	
a) Management plans and guidelines	No management plans / guidelines developed.
b) Summary of any maintenance and operation programs, specifically related to protection of these natural waterways	Nil.
c) Minimum Water hole levels/ capacities	Waterhole levels do not provide operational constraints.
d) Constraints on return flows to stream from the Licensee's water infrastructure or from private works	No Licensee constraints on these flows.

SCHEDULE 2 – Interim Water Allocation, Management and Sharing

S2.1 Interim Water Allocation to be managed under the Licence

580 ML of high priority interim water allocation (underground water)
 12,621 ML of medium priority interim water allocation (underground water)
 1,940 ML of medium priority interim water allocation (surface water)
15,141 ML Total

Section	Customer	Megalitres of Interim Water Allocation		Purpose	Priority
		Customer	SunWater		
Three Moon Creek – Cania Dam ponded area to Youlambie Weir. Three Moon Ck AMTD 70.3 – 130.8 km	Underground water users Section 1	6,286	§	Agriculture	Medium (GW)
	Monto Shire Council-Cania Dam Amenities	30		Urban	Medium (SW)
	Surface water users	224	§	Agriculture	Medium (SW)
Three Moon Creek – Youlambie Weir to Monto (including supplemented section Monal Ck) Three Moon Ck AMTD 64 – 70.3 km Monal Ck 0 – 2.8 km	Monto Shire Council Section 3	580	§	Urban	High (GW)
	Underground water users Section 3	1,975	§	Agriculture	Medium (GW)
	Surface water users	35	§	Agriculture	Medium (SW)
Three Moon Creek – Monto to Lot 31 RP224861 Three Moon Ck AMTD 54.6 – 64 km	Underground water users Section 4 (Includes Mulgildie Water Board)	2,600	§	Agriculture & urban	Medium (GW)
	Surface Water users	200	§	Agriculture & urban	Medium (SW)
Three Moon Ck – Lot 54 RW 104 and Lot 55 RW 104 to Lot 179 RW 89 and Lot 1 RP85454. Three Moon Ck AMTD 32.5 – 54.6 km	Underground water users Section 5	1,510	§	Agriculture	Medium (GW)
	Surface water allocation	1,145	§	Agriculture	Medium (SW)
	Monto Shire Council (Mulgildie)	34		Urban	Medium (SW)
Three Moon Ck – Lot 36 RW 90 to Abercorn Gauging Station Three Moon Ck AMTD 13.2 – 32.5 km	Underground water users Section 6	250	§	Agriculture	Medium (GW)
	Surface water users	272	§	Agriculture	Medium (SW)
TOTAL		15,141	0		

§ Indicates the total interim water allocation for existing licences issued under the *Water Resources Act 1989*.

- The interim water allocations in the Licence include underground water interim water allocations in the area that is benefited by recharge from this water supply scheme. The benefited area is defined on the plan in Schedule 2.6 (DNR Plan No A1 215701). The benefited area is subdivided into sections which are referred to in the above table.
- Interim Water Allocations (IWA) noted against Section, Customer and SunWater in the above table is representative of IWA allocated when the IROL was first issued in November 2000 unless otherwise shown in Schedule 4. There may have been some changes to ownership since that time. For example, as a result of reviews of IWA ownership or sale of IWA by SunWater. The department's database of individual entitlements provides the current record of IWA ownership.

SCHEDULE 2 (Cont)

S2.2 Volumes of major storages in the Scheme

Storage Name	Capacity* at FSL (ML)	EL at FSL (m AHD)
Cania Dam	88,500	331.0
Youlambie Weir	140	235.58
Monto Weir	20	226.74
Bazley Weir	70	221.50
Avis Weir	250	210.05
Mulgildie Weir	330	201.75
TOTAL	89,310	

* Total storage volume including dead storage. Total capacities have been rounded down for reporting purposes. The dead storage of Cania Dam is 650 ML.

S2.3 Water Sharing Rules

The water year is from 1st July to 30th June.

The Three Moon Creek Water Supply Scheme is primarily a underground water recharge scheme where releases are made from Cania Dam to supplement the underground water stored in the Three Moon Creek valley alluvium.

Separate announced allocations calculations are made for each of the surface water and underground water sub systems within the Three Moon Creek Water Supply Scheme based on the volume of water held in storage in Cania Dam and underground water levels in the alluvium sections.

Announced Allocation Procedure for Medium Priority Interim Water Allocation (Surface Water)

The volume available for release from Cania Dam is determined by the volume of water held in storage as at 1st July.

The announced allocation at the beginning of the water year is:

Storage level at Cania Dam	Announced Allocation
≥ Elevation 319.18 m (AHD)	100% for all medium priority holders
< Elevation 319.18 m (AHD)	100% for medium priority holders located at Cania Dam, weirs and water holes. 50% for medium priority holders located elsewhere.
Insufficient storage to supply 6000 ML winter release	0% for medium priority holders

Note: A storage level of 319.18 m (AHD) corresponds to approximately 30% of storage capacity using current storage survey information).

SCHEDULE 2 (Cont)

When the IROL holder is no longer releasing water in accordance with the Operating Rules for Cania Dam, the holders of interim water allocations may take water from waterholes or storages or during flow events. The total volume of water taken in the relevant water year must not exceed the interim water allocation holder's nominal volume.

When inflow occurs, the announced allocation is revised.

Announced Allocation Procedure for Medium Priority Interim Water Allocation (Underground water)

The Licensee currently operates and maintains a network of underground water observation bores which is set up either as a series of lines perpendicular to the Three Moon Creek, or in strategically located positions.

An announced allocation is determined for each of the 6 sections of the underground water system, based on the following information:

- The trends in the observed underground water levels;
- The water usage for each section;
- The storage volumes in Cania Dam available for releases to recharge underground water;
- The anticipated water usage patterns;
- Reserved storage for high priority supplies; and
- Desirable minimum aquifer levels.

Operating Rules for Cania Dam:

Storage release rules from Cania Dam are as follows:

1. Storage Level Above 319.18 m (AHD)

Two releases will be made in the water year. A summer release of approximately 7,500 ML over a duration of about 60 days and a winter release of approximately 6,000 ML over a duration of 50 days are made.

If significant stream flows occur in the early summer while the storage level is above 319.18 m(AHD) the Licensee (following consultation with the Water Advisory Committee) may not make a summer release, but increase the winter release volume to approximately 13,500 ML.

2. Storage Level Below 319.18m (AHD)

No summer release is made. A release of approximately 6,000 ML (if available) is made over a duration of 50 days in winter.

The Licensee in consultation with the Water Advisory Committee is to decide the commencement date of all releases.

Note: A storage level of 319.18 m (AHD) corresponds to approximately 30% of storage capacity using current storage survey information).

SCHEDULE 2 (Cont)

Terms for Announced Allocation

1. The announced allocation percentage is limited to a maximum of 100% of the interim water allocation in any water year.
2. The announced allocation percentage may be reviewed during the water year as a result of inflows into the storages or rises in the underground water levels due to vertical infiltration.
3. The announced allocation percentage will not be reduced during the water year.
4. Announced allocations for high priority interim water allocations will be 100% unless the announced allocation for medium priority interim water allocations is zero, in which case an announced allocation for high priority interim water allocations will be determined.

S2.4 General Conditions

1. The entitlements in the Licence do not include water-harvesting (high flow access) entitlements, which may be held as separate entitlements by SunWater or individual customers.
2. Non-riparian stock and domestic entitlements are included in the interim water allocations in the Licence.
3. Any storage volume shown after a storage level is approximate only and based on current storage survey information.
4. The Licensee is authorised to develop and offer water services and products designed to facilitate the use of water in this scheme provided that the services and products offered do not result in the total water usage for the scheme exceeding the total announced allocation volume (including an allowance for carryovers and forward draws) in each water year.
5. Necessary statutory approvals will be required for destroying vegetation, excavating or placing fill in a watercourse, lake or spring.

S2.5 Seasonal Water Assignments

A seasonal water assignment, commonly referred to as a temporary transfer, is a transfer of part or all of an announced allocation within a water year. The Licensee may approve a seasonal water assignment of water within the scheme, for water managed under the Licence, subject to the following:

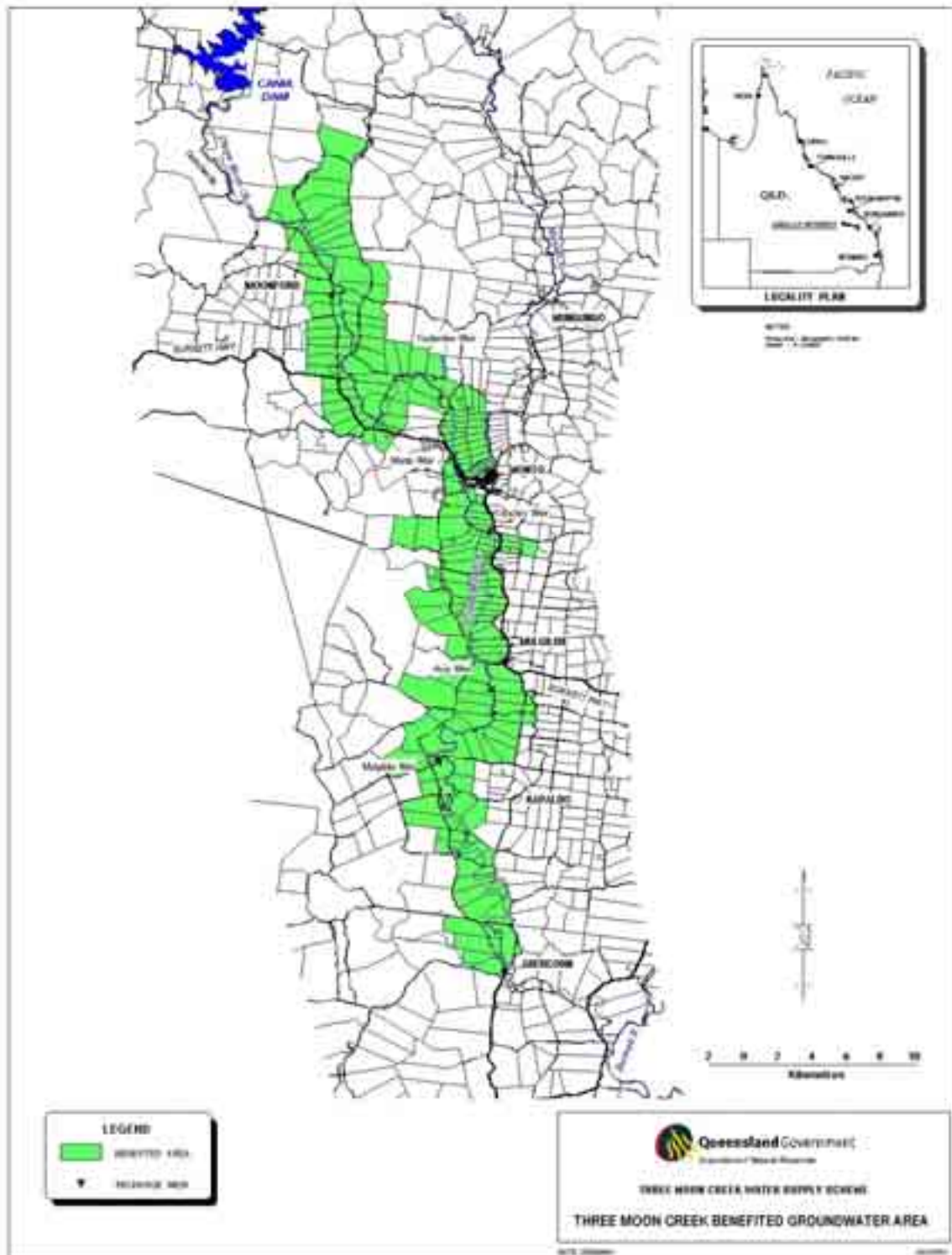
1. The approval may only be given for up to the end of the water year in which the approval is given.

SCHEDULE 2 (Cont)

2. No approval or undertaking of approval is to be given in advance of the current water year.
3. The approval must not be inconsistent with any aspect of the Licence.
4. Approval is not to be given for anyone to use water under a seasonal water assignment if an authorisation for works is required and they do not have such authorisation.

SCHEDULE 2 (Cont)

2.6 Benefited Area for Underground Water



SCHEDULE 3 – Monitoring and Reporting

S3.1 Water Monitoring

The Licensee must:

- (A) Implement and maintain a water quantity monitoring program, in accordance with the department's water monitoring procedures and protocols specified by the Chief Executive from time to time, which measures and records:
- (i) continuous levels in dam and weir pools for infrastructure listed at the end of this schedule;
 - (ii) tailwater flow for infrastructure listed at the end of this schedule, on a continuous basis. In addition to the overall discharge rate the component of such releases are to be measured and recorded for each of the following:
 - (a) any environmental flow provisions in SCHEDULES 1 and 2;
 - (b) operation of fishways under SCHEDULES 1 and 2; and
 - (c) for other purposes as determined by the Chief Executive;
 - (iii) diversions of surface water or the taking of groundwater by each customer of the licensee; the start and finish, date and time, of diversions into Youlambie channel; the start and finish, date and time, of releases from Youlambie channel to Monal Creek; water use for each grouping of interim water allocation in Schedule 2.1; on a quarterly basis; and
 - (iv) underground water levels in monitored bores within regulated underground water areas on a quarterly basis and coordinated with measurements for metered use.
- (B) Implement and maintain the following environmental water quality monitoring program in accordance with the department's water quality monitoring standards and protocols, to measure and record details of physico-chemical and biological conditions of natural ecosystems and report on a quarterly basis as follows:
- (i) for headwater of the infrastructure listed at the end of this schedule:
 - (a) the following by profile, dissolved oxygen, electrical conductivity, pH and temperature;
 - (b) Total Nitrogen and Total Phosphorus; and
 - (c) Cyanobacteria populations using methods, frequencies and sites in accordance with the Licensee's Blue-Green Algae Monitoring Manual.

SCHEDULE 3 (Cont)

(ii) for tailwater of the infrastructure listed at the end of this schedule:

dissolved oxygen, conductivity, pH, temperature, Total Nitrogen, Total Phosphorus and Total Sulphides. During periods of no overflow, measurements are to be taken when normal releases are being made.

S3.2 Provision of Data

The Licensee must provide data collected under the Licensee's monitoring responsibilities to the Chief Executive within 3 months of collection, in an electronic format as specified by the Chief Executive, which will allow direct entry to the department's databases.

S3.3 Water Reporting

S3.3.1 The Licensee must report to the Chief Executive at the end of each water year on:

(A) All decisions associated with the management of water and infrastructure in accordance with the Licence including:

- (i) water sharing rules including announced allocations or capacity sharing as relevant to the scheme;
- (ii) restrictions;
- (iii) carry-overs;
- (iv) forward draws;
- (v) flow event management; and
- (vi) seasonal water assignments.

(B) Circumstances where the requirements of the Licence were not met by the Licensee.

(C) Details of any actions relevant to the outcomes of the Licence which are taken in response to emergencies.

S3.3.2 If the Licensee becomes aware of any serious incident or event of detriment to the water and related resources, the Licensee must report the situation to the Chief Executive as soon as practicable, and in any event no later than 24 hours after the situation becomes known or would have reasonably become known by the Licensee.

S3.4 Infrastructure to which Schedule 3 applies

Infrastructure	Headwater		Tailwater	
	Levels	Quality	Flow	Quality
Cania Dam	Yes	Yes	Yes	Yes

SCHEDULE 4 – Amendment History

This licence was originally issued on 10 November 2000 and has been amended as follows:

Revision 1 (29th May 2006) under Section 184 of the *Water Act 2000*

a) In Schedule 3, S3.1 Water Monitoring

Replace

- (C) Implement and maintain the following environmental water quality monitoring program in accordance with the Department of Natural Resources water quality monitoring standards and protocols, to measure and record details of physico-chemical and biological conditions of natural ecosystems as follows:
- (i) for headwater of the infrastructure listed at the end of this schedule:
 - (a) dissolved oxygen, conductivity, pH, turbidity, temperature, nutrients, suspended solids, and chlorophyll *a*, on a quarterly basis;
 - (b) blue-green algae as per monitoring manual; and
 - (c) submersible data logging on a quarterly basis.Measurements during periods of no overflow are to be taken when normal releases are being made.
 - (ii) for tailwater of the infrastructure listed at the end of this schedule:
dissolved oxygen, conductivity, pH, turbidity, temperature, nutrients, suspended solids, and chlorophyll *a*, on a quarterly basis. During periods of no overflow, measurements are to be taken when normal releases are being made.

With

- (B) Implement and maintain the following environmental water quality monitoring program in accordance with the department's water quality monitoring standards and protocols, to measure and record details of physico-chemical and biological conditions of natural ecosystems and report on a quarterly basis as follows:
- (iii) for headwater of the infrastructure listed at the end of this schedule:
 - (a) the following by profile, dissolved oxygen, electrical conductivity, pH and temperature;
 - (b) Total Nitrogen and Total Phosphorus; and
 - (c) Cyanobacteria populations using methods, frequencies and sites in accordance with the Licensee's Blue-Green Algae Monitoring Manual.
 - (iv) for tailwater of the infrastructure listed at the end of this schedule:

SCHEDULE 4 (Cont)

dissolved oxygen, conductivity, pH, temperature, Total Nitrogen, Total Phosphorus and Total Sulphides. During periods of no overflow, measurements are to be taken when normal releases are being made.

Revision 2 (29th May 2006) under Section 185 of the Water Act 2000

a) In Schedule 1, S1.1

Replace

6a) Description

During periods of low water levels releases are to be made to support a community of platypus from AMTD 110.1km to AMTD 105km.

With

6a) Description

During periods of low water levels in Three Moon Creek from AMTD 110.1km to AMTD 105km, releases may be made to support a community of platypus from AMTD 110.1km to AMTD 105km taking into account advice from the Environmental Protection Agency regarding releases for this purpose.

b) In Schedule 1, S1.1

Replace

8a) Description

Single level offtake, no provisions for changing levels for water quality. Evasive actions as outlined in Blue Green Algae Monitoring Manual.

With

8a) Description

Single level offtake, no provisions for changing levels for water quality. Contingency plan as outlined in the Licensee's Blue-Green Algae Monitoring Manual.

c) In Schedule 1, S1.2

Replace

4b) Description

EL 235.58m AHD

EL 231.92m AHD

EL 236.65m AHD

EL 234.97m AHD

SCHEDULE 4 (Cont)

With

4b) Description

EL 235.58m AHD crest level of Youlambie Weir.

EL 231.92m AHD level of outlet works of Youlambie Weir.

EL 236.65m AHD crest level of Youlambie Anabranh Weir.

EL 234.97m AHD level of outlet works of Youlambie Anabranh Weir.

d) In Schedule 1, S1.5

Replace

2a) and 2b) Description

270 ML

With

2a) and 2b) Description

250 ML

e) In Schedule 2, S2.2, Volumes of major storages in the Scheme

Replace

Avis Weir Capacity and Total Capacity

270

89,330

With

Avis Weir Capacity and Total Capacity

250

89,310

f) Inclusion of Mulgildie Weir in Schedule 1, S1.7, 6a) Description

Include

Mulgildie Weir

g) Inclusion of note following table of Interim Water Allocations in S2.1

Include

2. Interim Water Allocations (IWA) noted against Section, Customer and SunWater in the above table is representative of IWA allocated when the IROL was first issued in November 2000 unless otherwise shown in Schedule 4. There may have been some changes to ownership since that time. For example, as a result of reviews of IWA

SCHEDULE 4 (Cont)

ownership or sale of IWA by SunWater. The department's database of individual entitlements provides the current record of IWA ownership.

h) Global Amendment

All references to the Department of Natural Resources (or NRM&E) have been changed to the Department of Natural Resources, Mines and Water.

i) Inclusion of new Section 5.0

Include

5.0 AMENDMENT HISTORY

The original licence was issued on 10 November 2000. The amendments since that date are shown in SCHEDULE 4.

j) Amendment of original Section 5.0

Replace

5.0 DICTIONARY

With

6.0 DICTIONARY

Replace

DNR means the Department of Natural Resources.

With

NRMW or department means Department of Natural Resources, Mines and Water.

k) Update Table of Contents and Table of Schedules to reflect Revision 2 i) and j)

l) In Schedule 2, S2.1, Interim Water Allocation to be managed under licence

Replace

580 ML of high priority interim water allocation (underground water)
12,752 ML of medium priority interim water allocation (underground water)
1,679 ML of medium priority interim water allocation (surface water)
15,011 ML Total

With

580 ML of high priority interim water allocation (underground water)
12,621 ML of medium priority interim water allocation (underground water)

SCHEDULE 4 (Cont)

1,940 ML of medium priority interim water allocation (surface water)

15,141 ML Total

m) In Schedule 2, S2.1 Table, Cania Dam to Youlambie Weir Section

Replace

Amenities-Cania Dam

With

Monto Shire Council- Cania Dam Amenities

Delete

The figure '30' from the SunWater column

Replace

The figure '30' for the Total at the bottom of the SunWater column

With

The figure '0'

n) In Schedule 2, S2.1 Table, Megalitres of Interim Water Allocation

Replace

Customer

5,525

Blank

90

580

2,312

35

2,525

425

2,140

775

34

250

290

14,981

With

Customer

6,286

SCHEDULE 4 (Cont)

30
224
580
1,975
35
2,600
200
1,510
1,145
34
250
272
15,141

o) In Schedule 2, S2.1 Table, Cania Dam to Youlambie Weir Section

Replace

Three Moon Ck AMTD 70.3 – 120 km

With

Three Moon Ck AMTD 70.3 – 130.8 km

p) In Schedule 2, S2.3, Table

Replace

< Elevation 319.18 m (AHD)
100% for medium priority holders located at weirs and water holes.
50% for medium priority holders located elsewhere.

With

< Elevation 319.18 m (AHD)
100% for medium priority holders located at Cania Dam, weirs and water holes.
50% for medium priority holders located elsewhere.

q) In Schedule 3, S3.1

Replace

(A) (i) continuous levels in dam and weir pools;

With

(A) (i) continuous levels in dam and weir pools for infrastructure listed at the end of this schedule;

SCHEDULE 4 (Cont)

Replace

- (A) (iii) diversions of water by each customer of the Licensee; diversions to channel distribution systems; diversions to watercourses used for water distribution and drainage; aggregate use by water users from each channel distribution system; water use for each grouping of interim water allocation in SCHEDULE 2.1; and releases from distribution systems to supplement watercourses or for other purposes; on a quarterly basis; and

With

- (A) (iii) diversions of surface water or the taking of groundwater by each customer of the licensee; the start and finish, date and time, of diversions into Youlambie channel; the start and finish, date and time, of releases from Youlambie channel to Monal Creek; water use for each grouping of interim water allocation in Schedule 2.1; on a quarterly basis; and

Replace

- (A) (iv) underground water levels in monitored bores within regulated underground water areas on a quarterly basis and coordinated with measurements for metered use in those bores.

With

- (A) (iv) underground water levels in monitored bores within regulated underground water areas on a quarterly basis and coordinated with measurements for metered use.

Revision 3 (29th May 2006) under Section 120(1)(b) of the *Water Regulation 2002*

- a) In Schedule 2, S2.4

Delete

2. Water users in the Monto Mulgildie Underground Water Area are able to convert their underground water interim water allocation to a surface water interim water allocation at a rate of 2 ML of underground water for 1 ML of surface water if the conductivity of their underground water supply is greater than 3,000 microsiemens per centimetre. Once a water user has converted, the entire underground water interim water allocation is surrendered.

Revision 4 (26th June 2008) under Section 185 of the *Water Act 2000*

- a) In Schedule 2, S2.3

SCHEDULE 4 (Cont)

Replace

Storage level at Cania Dam	Announced Allocation
≥ Elevation 319.18 m (AHD)	100% for all medium priority holders
< Elevation 319.18 m (AHD)	100% for medium priority holders located at Cania Dam, weirs and water holes. 50% for medium priority holders located elsewhere.

Note: A storage level of 319.18 m (AHD) corresponds to approximately 30% of storage capacity using current storage survey information).

When inflow occurs, the announced allocation is revised.

With

Storage level at Cania Dam	Announced Allocation
≥ Elevation 319.18 m (AHD)	100% for all medium priority holders
< Elevation 319.18 m (AHD)	100% for medium priority holders located at Cania Dam, weirs and water holes. 50% for medium priority holders located elsewhere.
Insufficient storage to supply 6000 ML winter release	0% for medium priority holders

Note: A storage level of 319.18 m (AHD) corresponds to approximately 30% of storage capacity using current storage survey information).

When the IROL holder is no longer releasing water in accordance with the Operating Rules for Cania Dam, the holders of interim water allocations may take water from waterholes or storages or during flow events. The total volume of water taken in the relevant water year must not exceed the interim water allocation holder's nominal volume.

When inflow occurs, the announced allocation is revised.

b) Global Amendment

All references to the Department of Natural Resources Mines and Water (or NRMW) have been changed to the Department of Natural Resources and Water.